Commonwealth of Kentucky
Division for Air Quality

STATEMENT OF BASIS / SUMMARY

Title V, Operating
PERMIT ID: V-20-034
Tennessee Gas Pipeline Company, L.L.C. - Station 871
8690 New Columbia Rd., Campbellsville, KY 42718
November 30, 2020
Source ID: 21-217-00034
Agency Interest #: 44057
Activity ID: APE20200001

Table of Contents

SECTION 1 - SOURCE DESCRIPTION

SIC Code and description: 4922, Natural Gas Transmission

Single Source Det. ☐ Yes ☒ No If Yes, Affiliated Source AI:

Source-wide Limit ☐ Yes ☒ No If Yes, See Section 4, Table A

28 Source Category ☐ Yes ☒ No If Yes, Category:

County: Taylor
Nonattainment Area ☒ N/A ☐ PM_{10} ☐ $PM_{2.5}$ ☐ CO ☐ NO_X ☐ SO_2 ☐ Ozone ☐ Lead
If yes, list Classification:

PTE* greater than 100 tpy for any criteria air pollutant ☒ Yes ☐ No
If yes, for what pollutant(s)?
☐ PM_{10} ☐ $PM_{2.5}$ ☒ CO ☒ NO_X ☐ SO_2 ☐ VOC

PTE* greater than 250 tpy for any criteria air pollutant ☒ Yes ☐ No
If yes, for what pollutant(s)?
☐ PM_{10} ☐ $PM_{2.5}$ ☒ CO ☒ NO_X ☐ SO_2 ☐ VOC

PTE* greater than 10 tpy for any single hazardous air pollutant (HAP) ☒ Yes ☐ No
If yes, list which pollutant(s): Formaldehyde

PTE* greater than 25 tpy for combined HAP ☒ Yes ☐ No

*PTE does not include self-imposed emission limitations.

Description of Facility:
Tennessee Gas Pipeline Company L.L.C.'s Station 871 is located near Campbellsville, Kentucky in Taylor County. The station receives natural gas via pipeline from upstream sources, compresses it using reciprocating internal combustion engines (RICE), and then transmits it via pipeline to downstream compressor stations.

SECTION 2 – CURRENT APPLICATION AND EMISSION SUMMARY FORM

Permit Number: V-20-034 Activity: APE20200001
Application Received: 7/22/2020 Application Complete: 11/18/2020

Permit Action: ☐Initial ☒Renewal ☐Significant Rev. ☐Minor Rev. ☐Administrative

Construction/Modification Requested? ☐Yes ☒No NSR Applicable? ☐Yes ☒No

Previous 502(b)(10) or Off-Permit Changes incorporated with this permit action ☐Yes ☒No

Description of Action:

- Renewal of permit.
- Determination that Broad Run Flex Project (completed in 2014) was not a modification at this facility as the facility was previously capable of bi-directional flow prior to the project, and therefore there was not a change in the method of operation.

V-20-034 Emission Summary		
Pollutant	2019 Actual (tpy)	V-20-034 (tpy)
CO	136.25	432.34
NO_X	638.78	2,261.02
PT	5.84	13.6
PM_{10}	5.84	13.6
$PM_{2.5}$	5.84	13.6
SO_2	0.10	0.31
VOC	20.59	62.54
Lead	0.0008	0.0025
Greenhouse Gases (GHGs)		
Carbon Dioxide	20,509.9	61,214.5
Methane	0.39	1.15
Nitrous Oxide	0.04	0.12
CO_2 Equivalent (CO_2e)	20,531.1	61,277.7
Hazardous Air Pollutants (HAPs)		
Acetaldehyde	1.30	4.21
Acrolein	1.12	3.2
Benzene	0.23	0.55
Formaldehyde	8.82	27.46
Hexane; N-Hexane	0.13	0.44
Methanol	0.40	1.27
Toluene	0.13	0.33
Xylene	0.04	0.11
Combined HAPs:	12.17	37.87

SECTION 3 – EMISSIONS, LIMITATIONS AND BASIS

Emission Unit #EP001 and EP002, 4 Stroke Lean Burn (4SLB) Reciprocating Compression Engines [871-A-01 and 871-A-02]

Initial Construction Date: EP001: 1963 and EP002: 1964

Process Description:
4 Stroke Lean Burn (4SLB) Reciprocating Compression Engines
Model: Ingersoll Rand KVT-616
Primary Fuel: Natural Gas
Power Output: 4,000 hp each
Max Operating Rate: 33.07 mmBtu/hr each
Controls: None

Applicable Regulation:
401 KAR 63:002, Section 2(4)(eeee), 40 C.F.R. 63.6580 to 63.6675, Tables 1a to 8, and Appendix A (Subpart ZZZZ), National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines.

Comments:
NO_X and CO emissions are calculated using emission factors from similar units in the Tennessee gas production database. Greenhouse gases are calculated using 40 CFR 98, Subpart C Table 1 and 2 for natural gas. All other pollutants are calculated using AP-42, Table 3.2-2 for Four stroke lean burn engines.

Pursuant to 40 CFR 63.6590(b)(3), the existing 4SLB engines do not have to meet the requirements of 40 CFR 63, Subpart ZZZZ or 40 CFR 63, Subpart A.

Emission Unit EP003, 2 Stroke Lean Burn (2SLB) Reciprocating Compression Engine [871-A-03]

Pollutant	Emission Limit or Standard	Regulatory Basis for Emission Limit or Standard	Emission Factor Used and Basis	Compliance Method
NO_X	*82% reduction during control period	401 KAR 51:150, Section 3	3287 lb/mmscf, Tennessee Gas Pipeline database for similar engine	Operate according to the compliance plan submitted to the Division

*See Comments for further clarification on emission limitation.

Initial Construction Date: 1964

Process Description:
2 Stroke Lean Burn (2SLB) Reciprocating Compression Engine
Model: Dresser Clark TCV-16
Primary Fuel: Natural Gas
Power Output: 5,500 hp
Max Operating Rate: 50.0 mmBtu/hr
Controls: None

Emission Unit EP003, 2 Stroke Lean Burn (2SLB) Reciprocating Compression Engine [871-A-03]

Applicable Regulation:
401 KAR 51:150, NO_X Requirements for Stationary Internal Combustion Engines.

401 KAR 63:002, Section 2(4)(eeee), 40 C.F.R. 63.6580 to 63.6675, Tables 1a to 8, and Appendix A (Subpart ZZZZ), National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines.

Comments:
NO_X and CO emissions are calculated using emission factors from similar units in the Tennessee gas production database. Greenhouse gases are calculated using 40 CFR 98, Subpart C Table 1 and 2 for natural gas. All other pollutants are calculated using AP-42, Table 3.2-1 for two stroke lean burn engines.

Complaince with 401 KAR 51:150 NO_X emission limitation is demonstrated by reducing the past NO_X emission rate by at least 82% or by complying with the compliance plan submitted to the Division.

Pursuant to 40 CFR 63.6590(b)(3), the existing 2SLB engine does not have to meet the requirements of 40 CFR 63, Subpart ZZZZ or 40 CFR 63, Subpart A.

Emission Unit EP04, 4SLB Reciprocating Emergency Engine (871-Aux-A-02)

Initial Construction Date: 2001

Process Description:
4SLB Reciprocating Emergency Engine (871-Aux-A-02)
Model: Caterpillar G3412TA
Primary Fuel: Natural Gas
Power Output: 690 hp
Max Operating Rate: 5.88 mmBtu/hr
Controls: None

Applicable Regulation:
401 KAR 63:002, Section 2(4)(eeee), 40 C.F.R. 63.6580 to 63.6675, Tables 1a to 8, and Appendix A (Subpart ZZZZ), National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines.

Note: D.C. Circuit Court [*Delaware v. EPA*, 785 F. 3d 1 (D.C. Cir. 2015)] has vacated the provisions in 40 CFR 63, Subpart ZZZZ that contain the 100-hour exemption for operation of emergency engines for purposes of emergency demand response under 40 CFR 63.6640(f)(2)(ii)-(iii). The D.C. Circuit Court issued the mandate for the vacatur on May 4, 2016.

Comments:
NO_X, and CO are calculated based on manufacturer's specifications. GHG's are calculated from 40 CFR 98, Subpart C Tables 1 and 2. All other emissions are calculated from AP-42, Table 3.2-2.

Pursuant to 40 CFR 63.6590(b)(3)(iii), the existing emergency engine does not have to meet the requirements of 40 CFR 63, Subpart ZZZZ or 40 CFR 63, Subpart A. Therefore, the permittee shall comply with 40 CFR 63, Subpart ZZZZ for the 690 HP emergency engine by meeting the requirements to be considered an emergency engine as defined in 40 CFR 63.6675.

Emission Unit E05, Jacket Water Heater (871-HEATER-01)				
Pollutant	**Emission Limit or Standard**	**Regulatory Basis for Emission Limit or Standard**	**Emission Factor Used and Basis**	**Compliance Method**
PM	0.8 lb/mmBtu	401 KAR 61:015, Section 4(1)(a)	7.6 lb/mmscf, AP-42 1.4-1	Compliance assumed while burning natural gas
	40% Opacity	401 KAR 61:015, Section 4(1)(c)	NA	
SO_2	6.0 lb/mmBtu	401 KAR 61:015, Section 5(1)	0.6 lb/mmscf, AP-42 1.4-1	

Initial Construction Date: 1964

Process Description:
[871-HEATER-01]
Model: NATCO T-4197101-01
Primary Fuel: Natural Gas
Max Operating Rate: 3.0 mmBtu/hr
Controls: None

Applicable Regulation:
401 KAR 61:015, Existing Indirect Heat Exchangers.

401 KAR 63:002, Section 2(4)(iiii), 40 C.F.R. 63.7480 to 63.7575, Tables 1 to 13 (Subpart DDDDD), National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters.

Comments:
Greenhouse gas emissions are calculated using 40 CFR 98, Subpart C, Table 1 and 2. All other emissions are calculated using AP-42 Chapter 1.4 Tables 1 through 4.

APE20200001: 40 CFR 63, Subpart DDDDD energy assessment update was conducted on September 28, 2020 and received on January 7, 2021. The permit has been updated to remove the one-time energy assessment requirement from the heater.

Testing Requirements\Results
N/A

SECTION 4 – SOURCE INFORMATION AND REQUIREMENTS

Table A - Group Requirements:
N/A

Table B - Summary of Applicable Regulations:

Applicable Regulations	Emission Unit
401 KAR 51:150, NO_X Requirements for Stationary Internal Combustion Engines.	EP003
401 KAR 61:015, Existing Indirect Heat Exchangers.	E05
401 KAR 63:002, Section 2(4)(eeee), 40 C.F.R. 63.6580 to 63.6675, Tables 1a to 8, and Appendix A (Subpart ZZZZ), National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines.	EP001, EP002, EP003, E04
401 KAR 63:002, Section 2(4)(iiii), 40 C.F.R. 63.7480 to 63.7575, Tables 1 to 13 (Subpart DDDDD), National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters.	E05
401 KAR 63:020, Potentially Hazardous Matter or Toxic Substances.	FUG001

Table C - Summary of Precluded Regulations:
N/A

Table D - Summary of Non Applicable Regulations:
N/A

Air Toxic Analysis
401 KAR 63:020, Potentially Hazardous Matter or Toxic Substances.
Based upon the emission rates of toxics and hazardous air pollutants provided in the application and the source of these emissions being natural gas combustion, the Division determines the source is in compliance with 401 KAR 63:020.

Single Source Determination
N/A

SECTION 5 - PERMITTING HISTORY

Permit	Permit type	Activity#	Complete Date	Issuance Date	Summary of Action	PSD/Syn Minor
G-04-001 R1	Renewal	APE20040001	6/26/06	11/10/06	Renewal	No
G-09-002	Renewal	APE20090001	2/11/2010	10/4/2010	Renewal	No
G-09-002 R1	Admin Amend	APE20120001	6/14/2012	6/25/2012	Admin Amend	No
V-15-050	Renewal	APE20150002	9/24/2015	2/4/2016	Renewal	No

SECTION 6 – PERMIT APPLICATION HISTORY:

N/A

APPENDIX A – ABBREVIATIONS AND ACRONYMS

AAQS – Ambient Air Quality Standards
BACT – Best Available Control Technology
Btu – British thermal unit
CAM – Compliance Assurance Monitoring
CO – Carbon Monoxide
Division – Kentucky Division for Air Quality
ESP – Electrostatic Precipitator
GHG – Greenhouse Gas
HAP – Hazardous Air Pollutant
HF – Hydrogen Fluoride (Gaseous)
MSDS – Material Safety Data Sheets
mmHg – Millimeter of mercury column height
NAAQS – National Ambient Air Quality Standards
NESHAP – National Emissions Standards for Hazardous Air Pollutants
NO_x – Nitrogen Oxides
NSR – New Source Review
PM – Particulate Matter
PM_{10} – Particulate Matter equal to or smaller than 10 micrometers
$PM_{2.5}$ – Particulate Matter equal to or smaller than 2.5 micrometers
PSD – Prevention of Significant Deterioration
PTE – Potential to Emit
SO_2 – Sulfur Dioxide
TF – Total Fluoride (Particulate & Gaseous)
VOC – Volatile Organic Compounds